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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. **D5381-00001**First Inventor or Application Identifier **Michael Marcase**Title **GOLF CLUB AND CLUB HEAD**Express Mail Label No. **EL378862797US**

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ *Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original, and a duplicate for fee processing)
2. ☒ Specification [Total Pages **11**]
(preferred arrangement set forth below)
- Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the invention
 - Brief Summary of the invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **2**]
4. Oath or Declaration [Total Pages **3**]
- a. ☒ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
- i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

*NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
- a. ☐ Computer Readable Copy
- b. ☐ Paper Copy (identical to computer copy)
- c. ☐ Statement verifying identity of above copies.

ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
9. ☐ English Translation Document (if applicable)
10. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
11. ☐ Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
13. ☒ *Small Entity Statement(s) (PTO/SB/09-12) ☐ Statement filed in prior application, Status still proper and desired
14. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
15. ☐ Other: **Certification Under 37 CFR 1.10**

16. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: _____

Prior application information:

Examiner _____

Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The corporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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Signature		Date	11/12/99

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

APPLICANT or PATENTEE: Michael Marcase**SERIAL NO.:** Not Yet Assigned

[] PATENT NO. _____

FILED: Herewith

[] ISSUED ON _____

TITLE: Golf Club and Club Head

**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(b)) -- INDEPENDENT INVENTOR**

As below named inventor, I hereby state that I qualify as an independent inventor, as defined in 37 CFR 1.9(c), for purposes of paying reduced fees to the United States Patent and Trademark Office under Sections 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office, with regard to the invention described in:

☒ the specification filed herewith, with title as listed above.

☐ the application identified above.

☐ the patent identified above.

I have not assigned, granted, conveyed or licensed, and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☒ No such person, concern, or organization exists.

☐ Each such person, concern or organization is listed below.*

**NOTE: Separate statements are required from each named person, concern or organization having rights to the invention as to their status as small entities. (37 CFR 1.27).*

NAME: _____

ADDRESS: _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization


I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small business entity is no longer appropriate. (37 CFR 1.28(b)).

(Check the following item, if desired.)

- [] I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Inventor

Michael Marcuse


(Signature of Inventor)

DATE: 11-8-99

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GOLF CLUB AND CLUB HEAD

FIELD OF THE INVENTION

The present invention relates to an improved golf club head for use in golf clubs, and more particularly for use in chippers and wedges.

BACKGROUND OF THE INVENTION

Historically, golfers have found it difficult to accurately propel a ball onto the fairway or green from the rough, that grass typically located adjacent to the fairway or green and characterized by a longer length of grass. This difficulty occurs because of the tendency of the club head to turn or twist when it makes contact with the rough, whether it be high grass or shorter, wirery grass. Such twisting or turning of the club head prohibits the striking face of the club head from making solid contact with the golf ball, often leading to inconsistent and undesired results.

Typically, the club heads used for advancing golf balls from the rough to the fairway or green, such as pitching wedges or chippers, have blunt, dull or rounded leading edges with relatively large sole-to-striking face angles. These designs often succumb to the problem of club head twisting or turning when contact is made with the rough. This problem can be alleviated by a design that allows the club head to cut through the grass behind the golf ball.

While some club heads have been designed with sharp leading edges, the design of these club heads is impractical for cutting through high grass. For example, Clements (U.S. Pat. No. 3,003,768) shows a club head with a short lip at the leading edge. This

club head, as revealed in the patent, was designed for the purpose of advancing a ball from sand or water. The purpose and design of the sharp edge in Clements is to assist in striking the ball by scooping an obstruction such a water or sand into a slot designed to funnel the obstruction through to the rear side of the club head. Clements does not reveal a true knife-like edge with a small sole-to-striking face angle to facilitate cutting through rough. In addition, the width of the sole resulting from the angle between the scooping face and the sole inhibits a grass cutting action.

Likewise, British Patent No. 1,078,412 shows a cutting edge as part of the hosel of a golf club head. This edge does not form a part of the blade of the golf club head. The edge, therefore, does not foster a cutting action by the striking face as it proceeds through troublesome rough.

The current designs for club heads used in advancing balls from the rough reveal the need for an improved club head that will provide controlled golf shots from the rough.

SUMMARY OF THE INVENTION

As herein described, the present invention provides for a golf club head that includes a hosel and a metal blade. The metal blade includes a knife-like leading edge at the juncture of a sole and a striking face, a sole with a rounded protrusion, and a rear face that extends from the sole's protrusion to a trailing edge of the striking face.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevation view of a golf club head in accordance with the invention.

FIGURE 2 is a cross section view of the golf club head of Figure 1 taken along the section line 2-2 of Figure 1.

FIGURE 3 is a cross section view of one embodiment of the golf club head in accordance with the invention..

FIGURE 4 is a rear elevation view of one embodiment of the golf club head in accordance with the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Figures 1 and 2, a golf club head is designated generally at **10**, in accordance with a preferred embodiment of the present invention. The end of the club head where the hosel **14** is located is referred to as the heel end. The end of the club head opposite the heel end is referred to as the toe end. The leading end of the club head is generally the downward most portion of the club head. The trailing end of the club is generally the upward most portion of the club head.

The golf club head includes a hosel **14** and a metal blade **16** and may be attached to a shaft **12** (shown broken to reduce the size of the figure). The shaft **12** may have a handle portion at one end (not shown) and be fitted to the hosel **14**. The hosel **14** connects the metal blade **16** to the shaft **12**.

The metal blade **16** comprises a striking face **18**, a sole **20** and a rear face **22**. The striking face **18** meets the sole **20** at a knife-like leading edge **24**. The striking face **18**

is planar and meets the rear face **22** at a trailing edge **26**. The rear face may extend in an arc **28** from the trailing edge **26** and then become planar and substantially parallel to the striking face **18**. The rear face **22** meets the sole **20** at a rounded protrusion **30** that runs substantially parallel to the knife-like leading edge **24** along the surface of the golf club head opposite the striking face **18**. Beginning at the leading end of the protrusion, the sole **20** is planar, ultimately meeting the striking face **18** at the knife-like leading edge **24**.

The metal blade **16** is comprised of a durable metal that can maintain a hardened edge, for example a hardened steel. A durable metal will better allow the knife-like leading edge **24** to maintain its cutting edge through repeated uses.

In a preferred embodiment, the metal blade **16** has disposed within it at least one metal dowel **32** that is located substantially forward of and substantially parallel to the rounded protrusion **30** of the sole **20**. Alternatively, the metal blade **18** may include two metal dowels **32** disposed in the metal blade **18** and located substantially on each side of the apex of rounded protrusion **30** of the sole **20** and substantially parallel to such protrusion **30**, with the leading dowel **32B** disposed toward the knife-like leading edge **24** and the trailing dowel **32C** disposed toward the trailing edge **26**. In addition, it is preferred that the metal dowels **32** are cylindrical, with the leading dowel **32B** being smaller in diameter than the trailing dowel **32C**. The preferred diameter of the leading dowel **32B** is 0.25 inch or less and the preferred diameter of the trailing dowel **32C** is between 0.375 inch and 0.4375 inch. Additionally, each metal dowel **32** is embedded approximately 0.25 inch from the center of the edge of the toe end of the club head **10**

and 0.25 inch from edge of the metal blade **16** that is attached to the hosel **14** of the golf club head **10**. The metal dowels **32** may be made from a metal having a density greater than that of the metal from which the rest of the club head is formed. For example, the metal dowels **32** could be made from lead, tungsten or steel. The inclusion, location and density of these metal dowels **32** promote a desired swing pendulum action.

In a preferred embodiment of the invention, the angle **a** between the striking face **18** and the sole **20** is between 20° and 30° . This narrow angle **a**, in combination with the knife-like leading edge **24**, permits the club head **10** to cut through the rough, thereby allowing the striking face **18** to make more solid and accurate contact with the golf ball.

The knife-like leading edge **24** may resemble various knife shapes, such as a straight edge or a serrated edge. An example of a serrated embodiment is depicted in Figure 4. In such a serrated embodiment, a distance between the troughs **34** of the serration is between approximately 0.1875 inch and 0.250 inch. This serration can help improve the effectiveness of the knife-like leading edge **24** as it cuts through the rough.

In a preferred embodiment, the striking angle **b** between the striking face **18** and a vertical plane **100** in which the shaft **12** and hosel **14** of the golf club are positioned when they are in a substantially upright address position is between 45° and 60° , where the vertical plane **100** is perpendicular to the ground level horizontal plane **110** and parallel to the leading edge **24** of the club head **10**. A higher angle **b** promotes a higher but shorter shot. A smaller angle **b** allows for a longer shot but provides for a lower ball flight trajectory as is well known in the golf industry.

In one preferred embodiment, the thickness of the metal blade **16** between the

striking face **18** and the planar portion of the rear face **22** is between 0.8125 inch and 0.875 inch. In addition, the length of the club head **10** from the knife-like leading edge **24** to the trailing edge **26** at the line **38** where grooves on the striking face terminate on the toe end of the club is between 2.375 and 2.5 inches. Also, the distance from the intersection of the hosel **14** meets the metal blade **16** to the toe end is between 4.00 inches to 4.75 inches.

The angle **c** between the ground level **110** and the apex or downward most point of the rounded protrusion **30** of the sole **20** is approximately 10° when the shaft **12** and hosel **14** of the golf club are in a substantially upward address position in the vertical plane **100** perpendicular to the ground level horizontal plane **110** and parallel to the leading edge **24** of the club head. This protrusion **30** helps prohibit the knife-like leading edge **24** from cutting too deeply into the ground by providing a bounce mechanism as the club head **10** proceeds downward. As the angle **b** between the striking face **18** and the above described vertical plane decreases and the striking face **18** becomes more upright, the distance between the apex of the rounded protrusion **30** of the sole **20** and the striking face **18** will necessarily increase to maintain the angle **c**.

Another embodiment of the golf club head is illustrated in Figure 3. In this embodiment, the rear face **22A** gradually curves after the arc **28A** to meet the protrusion **30A** of the sole **20A**. Further, in this embodiment, the protrusion **30A** also gradually curves to form into the planar region of sole **20A**. Like other embodiments, angles **a**, **b**, and **c** are maintained as described above to insure the leading edge's **24** effectiveness and help prevent the leading edge **24** from digging too far into the ground during its

downward progression.

An abrasive coating can also serve as the striking face **18** in one embodiment of the invention. Such a coating may improve spin on a golf ball struck by the club head **10** by facilitating better contact between the club head **10** and the golf ball. Spin is a very desirable result for most wedge shots. Thus, a golfer may enjoy the added benefit of increased spin along with the advantages of the invention already described. This abrasive coating may be formed, for example, by embedding particles of a material such as diamond into the striking face of the club head.

Although the invention has been described in terms of exemplary embodiments, it is not limited thereto. Rather, the appended claims should be construed broadly to include other variants and embodiments of the invention that may be made by those skilled in the art without departing from the scope and range of equivalents of the invention.

CLAIMS

What is claimed is:

1. A golf club head comprising:

a hosel located at a heel end to accommodate a shaft, and

a metal blade comprising a striking face, a sole, and a rear face, the striking face and the sole meeting at a knife-like leading edge, the sole having a protrusion running substantially parallel to the leading edge and located at the juncture of the sole and the rear face, the rear face meeting the striking face at a trailing edge.

2. The golf club head of claim 1, further including at least one metal dowel disposed in the metal blade and located substantially forward of and substantially parallel to an apex of the protrusion of the sole.

3. The golf club head of claim 1, further including a leading metal dowel and a trailing metal dowel disposed in the metal blade and located substantially on each side of an apex of the protrusion of the sole, the leading metal dowel disposed between the protrusion of the sole and the leading edge and the trailing metal dowel disposed between the protrusion of the sole and the trailing edge.

4. The golf club head of claim 3, wherein the leading metal dowel is cylindrical and smaller in diameter than the trailing metal dowel, the trailing metal dowel also being cylindrical.

5. The golf club head of claim 4, wherein the leading metal dowel has a diameter of 0.25 inch or less, and the trailing metal dowel has a diameter between 0.375 inch and 0.4375 inch.

1 6. The golf club head of claim 2, wherein the metal dowel is disposed between
2 approximately 0.25 inch from an edge of the metal blade connected to the hosel of the
3 golf club head and 0.25 inch from the center of a toe edge of the golf club head opposite
4 the hosel of the golf club head.

1 7. The golf club head of claim 2, wherein the metal dowel is made of a metal
2 having a density greater than the density of the metal from which the metal blade is
3 formed.

1 8. The golf club head of claim 7, wherein the metal dowel is made of lead.

1 9. The golf club head of claim 7, wherein the metal dowel is made of tungsten.

1 10. The golf club head of claim 7, wherein the metal dowel is made of steel.

1 11. The golf club head of claim 1, wherein the angle between the striking face
2 and a vertical plane in which the hosel of the golf club head is positioned in when it is
3 in a substantially upright address position is between 45° and 60°, where the vertical
4 plane is perpendicular to the ground level horizontal plane and parallel to the leading
5 edge of the club head.

1 12. The golf club head of claim 1, wherein the angle between the striking face
2 and the sole is between 20° and 30°.

1 13. The golf club head of claim 1, wherein the knife-like leading edge is straight.

1 14. The golf club head of claim 1, wherein the knife-like leading edge is serrated.

1 15. The golf club head of claim 14, wherein the distance between a pair of
2 adjacent troughs of the knife-like leading edge is between 0.1875 inch and 0.250 inch.

1 16. The golf club head of claim 1, wherein the thickness of the metal blade

1 between the striking face and a planar portion of the rear face positioned substantially
2 parallel to the striking face is between 0.8125 inch and 0.875 inch.

1 17. The golf club head of claim 1, wherein a distance from the leading edge to
2 the trailing edge of the golf club head at a point where a set of grooves ends toward the
3 toe end of the club head is between 2.375 inches and 2.5 inches.

1 18. The golf club head of claim 1, wherein the angle at the point of the leading
2 edge between ground level and the downward most point of the rounded protrusion of
3 the sole is approximately 10° when the hosel of the golf club head is in a substantially
4 upright address position in a vertical plane that is perpendicular to the ground level
5 horizontal plane and parallel to the leading edge of the golf club head.

1 19. The golf club head of claim 1, further including a shaft attached to the hosel
2 and having a handle positioned at an end opposite the hosel.

1 20. The golf club head of claim 1, wherein the striking face is abrasive.

ABSTRACT

A golf club head that includes a hosel and a metal blade. The metal blade includes a knife-like leading edge at the juncture of the sole and striking face, a sole with a rounded protrusion, and a rear face that extends from the sole's protrusion to the trailing edge of the striking face. The knife-like leading edge allows the club head to easily cut through high grass behind the golf ball, thus prohibiting the grass from turning or twisting the club head. The rounded protrusion of the sole prevents the head from cutting too deeply into the ground surface.

Figure 1

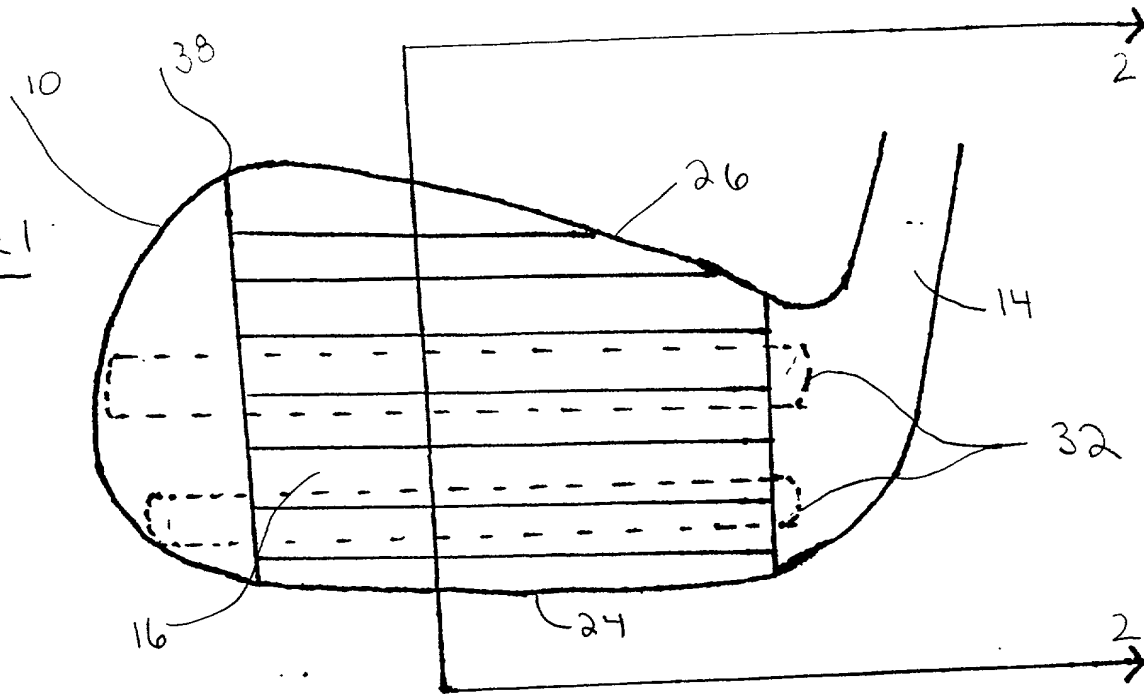


FIGURE 2

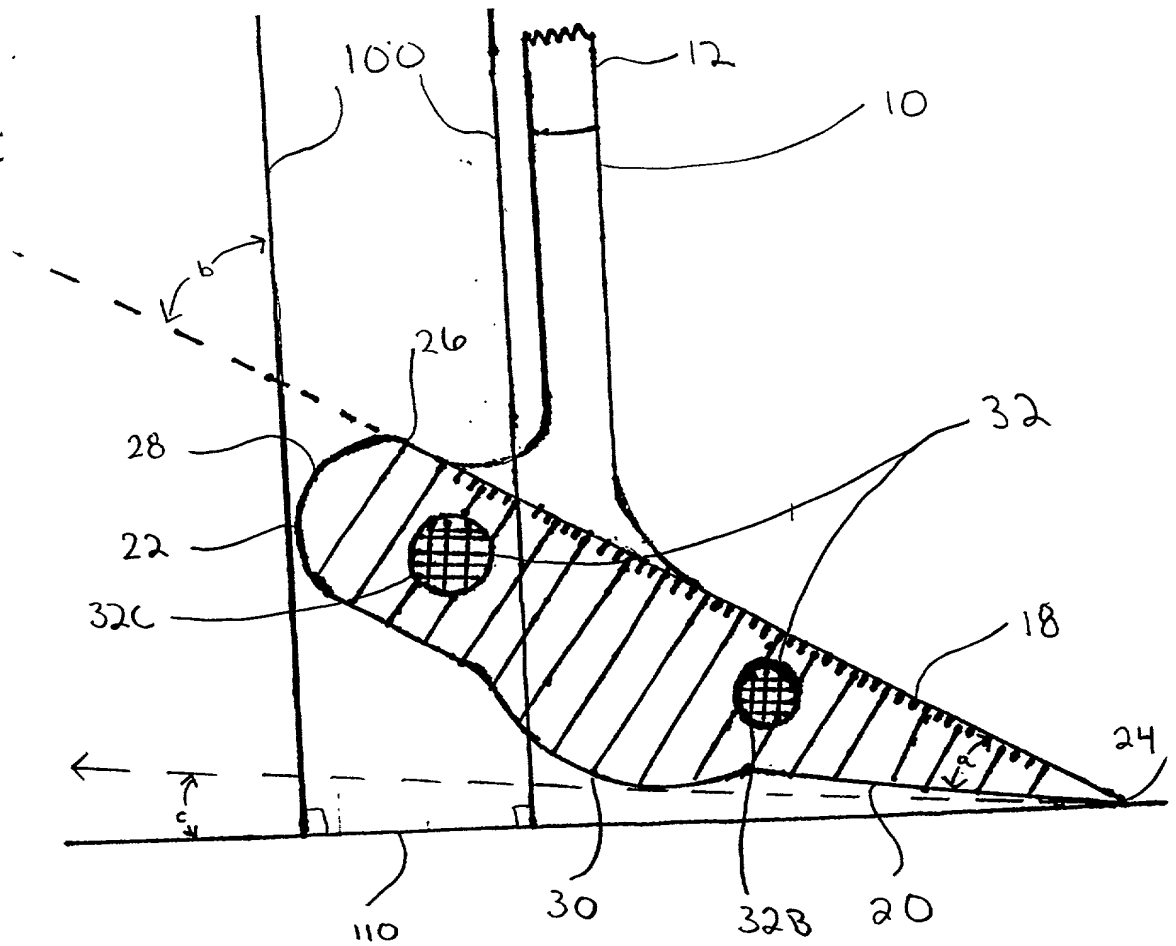


Figure 3

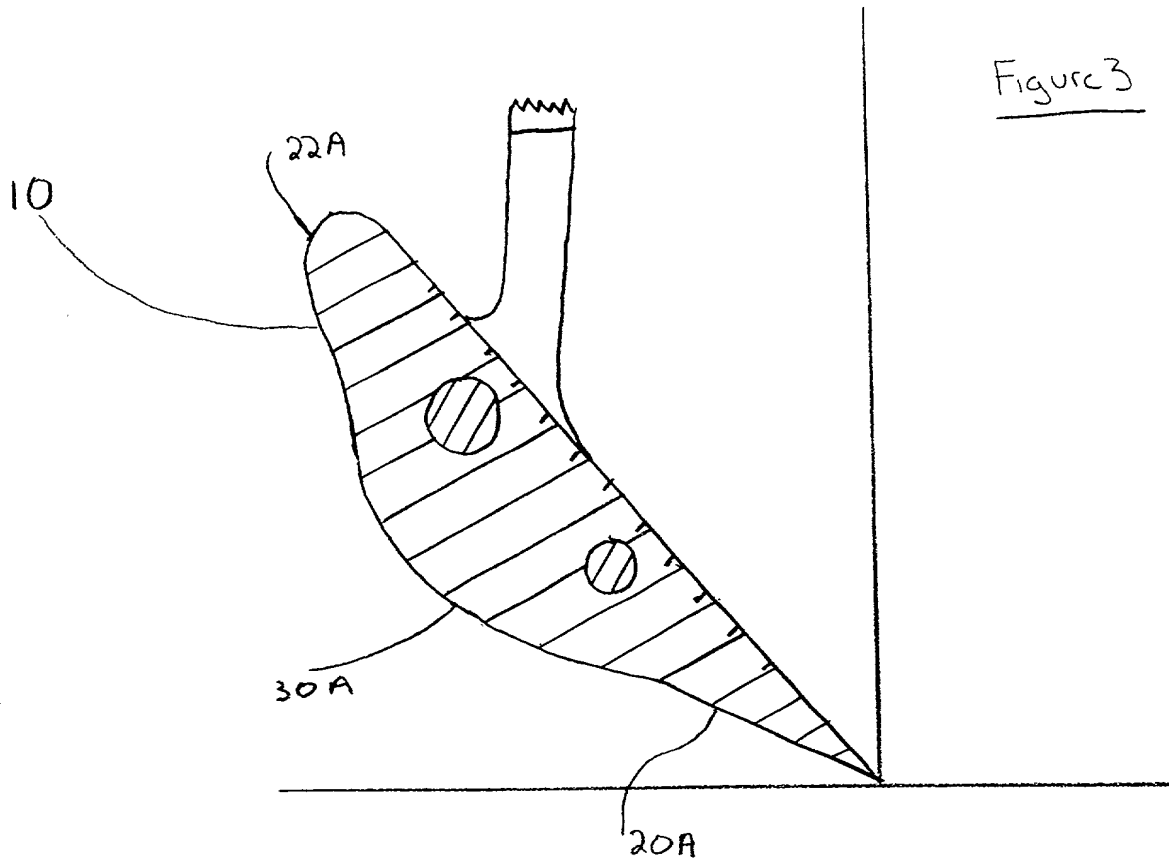
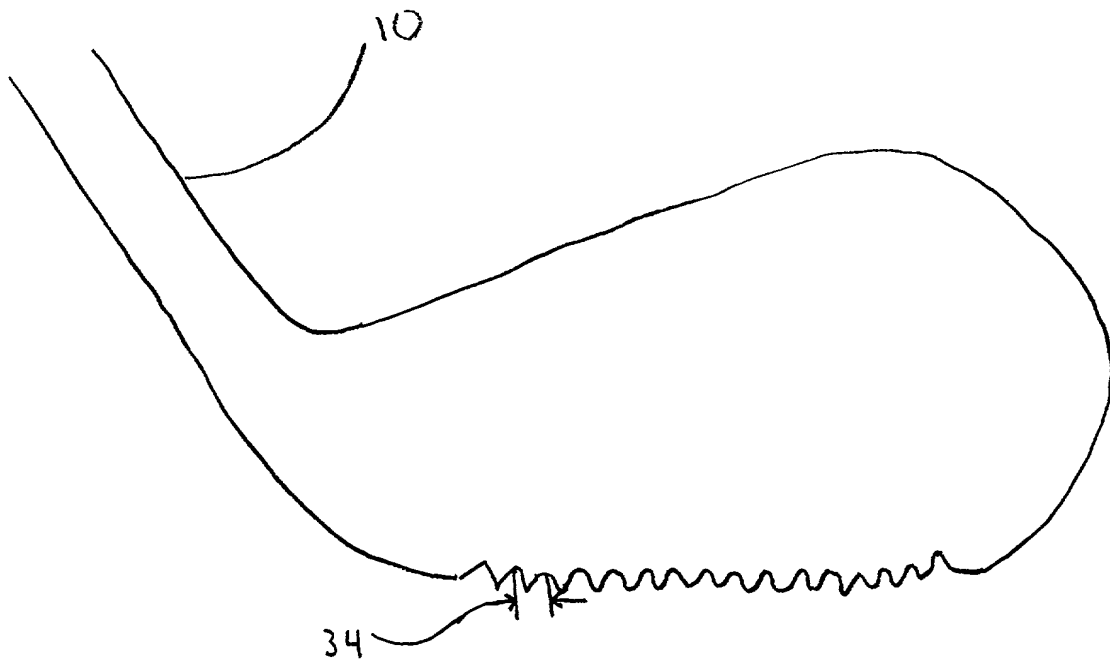


Figure 4



IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **GOLF CLUB AND CLUB HEAD** the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

None

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

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